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10/623,347	07/18/2003	Richard Daniel Colvin	2376.0017	5026

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EXAMINER	
THANGAVELU, KANDASAMY	
ART UNIT	**PAPER NUMBER**
2123	

DATE MAILED: 02/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/623,347	COLVIN ET AL.	
	Examiner	Art Unit	
	Kandasamy Thangavelu	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5-7,11 and 12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-7,11 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to the Applicants' amendment dated November 28, 2005. Claims 1, 5, 6, 7, 11 and 12 were amended. Claims 2-4, 8-10 and 13-18 were canceled. Claims 1, 5, 6, 7, 11 and 12 of the application are pending. This office action is made non-final.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. §112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 5, 6, 7, 11 and 12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 states, "determining a best set of platform locations from the set of possible platform locations by an iterative process which adds each of the possible platform locations to a list comprising the user-specified number of platforms and determining if the inclusion of each one of the possible platform locations in the list causes the total set of platforms to reach at least one of: more targets or the same number of targets with less total distance".

The specification does not describe **the method of determining a best set of platform locations** from the set of possible platform locations and the method of determining if the inclusion of each one of the possible platform locations in the list causes the total set of platforms to reach at least one of: more targets or the same number of targets with less total distance, to enable one of ordinary skill in the art to use the method.

Claim 7 states, "determining a best set of platform locations from the set of possible platform locations by an iterative process which adds each of the possible platform locations to a list comprising the user-specified number of platforms and determining if the inclusion of each one of the possible platform locations in the list causes the total set of platforms to reach at least one of: more targets or the same number of targets with less total distance".

The specification does not describe **the method of determining a best set of platform locations** from the set of possible platform locations and the method of determining if the inclusion of each one of the possible platform locations in the list causes the total set of platforms to reach at least one of: more targets or the same number of targets with less total distance, to enable one of ordinary skill in the art to use the method.

Claims rejected but not specifically addressed are rejected based on their dependency on rejected claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1, 5, 6, 7, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cullick et al.** (U.S. Patent 6,549,879) in view of **Brunet** (U.S. Patent 6,315,054), and further in view of **Smitherman** (U.S. Patent 5,975,207) and **Admitted prior art**.

6.1 **Cullick et al.** teaches determining optimal well locations from a 3D reservoir model. Specifically as per claim 1, **Cullick et al.** teaches computer system, comprising a user interface, memory storage means, and a processor coupled to the user interface and the memory storage means (CL6, L30-32; CL7, L54-56). **Cullick et al.** teaches determining an optimum location for each well location in the set of well locations (the wells are located to optimize the desired property of the reservoir that is related to the hydrocarbon productivity; CL1, L20-22).

Cullick et al. teaches evaluating a small subset of well site combinations and selecting those with the highest value of the desired productivity metric e.g. net pay or permeability thickness (CL1, L35-40); searching a large number of candidate trajectories from platform locations with a preset radius, inclination angle, well length, and azimuth; each well trajectory is analyzed with respect to net pay (CL2, L38-42); modeling the spatial configuration constraints-minimum well spacing, maximum well length, maximum number of wells, distance to platforms (CL4, L60-65). **Cullick et al.** does not expressly teach computer-implemented method of generating optimized platform location sets locations for extracting hydrocarbons from underground reservoirs. **Brunet** teaches computer-implemented method of generating optimized platform location sets locations for extracting hydrocarbons from underground reservoirs (CL2, L19-20). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Cullick et al.** with the method of **Brunet** that included computer-implemented method of generating optimized platform location sets locations for extracting hydrocarbons from underground reservoirs because that would allow increasing production and maximizing ultimate recovery of hydrocarbons from the reservoirs, while lowering the cost (CL2, L3-5); and reducing the number of platforms resulting in reduced investment and lower operating costs (CL2, L19-20).

Cullick et al. does not expressly teach computing a maximum number of targets to be assigned for each of a user-specified number of platforms by determining the product of a user-specified number of slots and a user-specified number of targets per slot. **Smitherman** teaches computing a maximum number of targets to be assigned for each of a user-specified number of

platforms by determining the product of a user-specified number of slots and a user-specified number of targets per slot (CL1, L37-40). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Cullick et al.** with the method of **Smitherman** that included computing a maximum number of targets to be assigned for each of a user-specified number of platforms by determining the product of a user-specified number of slots and a user-specified number of targets per slot, because that would allow reaching the furthest areas of the production zone for optimum production with minimum cost (CL1, L37-40; CL2, L29-34).

Cullick et al. does not expressly teach selecting a possible set of platform locations from at least one of a number of X and Y, coordinates from automatically generated target locations, a user-specified number of platform locations, or a generated grid of evenly spaced platform locations. **Brunet** teaches selecting a possible set of platform locations from at least one of a number of X and Y, coordinates from automatically generated target locations, a user-specified number of platform locations, or a generated grid of evenly spaced platform locations (CL2, L19-20).

Cullick et al. teaches the processor determines the additional well locations by validating the additional well locations (CL5, L40-45; CL6, L32-36). **Cullick et al.** does not expressly teach validating the set of possible platform locations to determine that each possible platform location in the set is in a geographically valid area by comparing each possible platform location against a set of exclusionary polygons. **Brunet** teaches validating the set of possible platform locations to determine that each possible platform location in the set is in a

geographically valid area by comparing each possible platform location against a set of exclusionary polygons (CL2, L19-20).

Cullick et al. does not expressly teach determining a best set of platform locations from the set of possible platform locations by an iterative process which adds each of the possible platform locations to a list comprising the user-specified number of platforms and determining if the inclusion of each one of the possible platform locations in the list causes the total set of platforms to reach at least one of: more targets or the same number of targets with less total distance. **Brunet** teaches determining a best set of platform locations from the set of possible platform locations by an iterative process which adds each of the possible platform locations to a list comprising the user-specified number of platforms and determining if the inclusion of each one of the possible platform locations in the list causes the total set of platforms to reach at least one of: more targets or the same number of targets with less total distance (CL2, L19-20).

Cullick et al. does not expressly teach optimizing each platform location in the best set of platform locations by an iterative process which determines whether an improvement is achieved by moving each of the platform locations within a fraction of a platform reach in eight compass directions around a current selected best platform location. **Admitted prior art** teaches optimizing each platform location in the best set of platform locations by an iterative process which determines whether an improvement is achieved by moving each of the platform locations within a fraction of a platform reach in eight compass directions around a current selected best platform location (Page 2, Para 004). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Cullick et al.** with the method of **Smitherman** that included optimizing each platform location in the best set of platform

locations by an iterative process which determines whether an improvement is achieved by moving each of the platform locations within a fraction of a platform reach in eight compass directions around a current selected best platform location, because that would allow reducing the cumulative measured depth and calculated footage of well paths (Page 2, Para 004).

6.2 As per claims 5 and 6, **Cullick et al., Brunet, Smitherman** and **Admitted prior art** teach the method of claim 1. **Admitted prior art** teaches that optimizing each platform location set includes setting an initial step-out distance equal to the fraction of the platform reach; selecting a potential new platform location located the step-out distance from the original platform location in one of the (four) eight compass directions; computing at least one of the

number of targets that could be reached from the potential new platform location or the total drilling distance to reach all the targets to be reached from the potential new platform location; comparing the computed number of targets that could be reached from the potential new platform location or the total drilling distance to reach all the targets to be reached from the potential new platform location against the values at the original platform location; determining that the potential new platform location is better than the original location based on at least one of the following: more targets may be reached from the potential new platform location than from the original platform location and the same number of targets ma be reached from the potential new platform location with less drilling distance than from the original platform location; moving the original platform location to the potential new platform location; and

executing the steps for other compass directions; and executing the steps by progressively decreasing the step-out distance until a more desirable platform location is no

longer achieved; and the initial step-out distance is reduced by a predetermined amount for each execution of step (i) (Page 2, Para 004).

6.3 As per Claims 7, 11 and 12, these are rejected based on the same reasoning as Claims 1, 5 and 6, supra. Claims 7, 11 and 12 are computer readable medium claims reciting the same limitations as Claims 1, 5 and 6 as taught throughout by **Cullick et al., Brunet, Smitherman** and **Admitted prior art.**

Response to Arguments

7. Applicants' arguments with respect to 35 USC 103 (a) rejections filed on November 28, 2005 have been considered. Applicants' arguments with respect to 35 USC 103 (a) rejections are not persuasive.

7.1 As per the applicants' argument that "Cullick fails to teach, disclose, or suggest each of the features specified in amended independent claim 1; Cullick fails to disclose generating optimized platform locations using an iterative process which includes determining a best set of platform locations based on a number of reachable targets; in particular, Cullick does not disclose adding possible platform locations to a list comprising a user-specified number of platforms and determining if the inclusion of the possible platform locations in the list causes the total set of platforms to reach more targets or the same number of targets with less total distance; Cullick also fails to disclose determining whether an improvement in the placement of platform locations is achieved by moving each of the platform locations within a fraction of a platform reach in eight compass directions around a current

selected best platform location; Cullick also fails to disclose validating a set of possible platform locations to determine that each possible platform location in the set is in a geographically valid area by comparing each possible platform location against a set of exclusionary polygons", the examiner has used **Cullick et al., Brunet, Smitherman** and **Admitted prior art** in this Office Action.

Brunet teaches computer-implemented method of generating optimized platform location sets locations for extracting hydrocarbons from underground reservoirs (CL2, L19-20). **Brunet** teaches validating the set of possible platform locations to determine that each possible platform location in the set is in a geographically valid area by comparing each possible platform location against a set of exclusionary polygons (CL2, L19-20). **Brunet** teaches determining a best set of platform locations from the set of possible platform locations by an iterative process which adds each of the possible platform locations to a list comprising the user-specified number of platforms and determining if the inclusion of each one of the possible platform locations in the list causes the total set of platforms to reach at least one of: more targets or the same number of targets with less total distance (CL2, L19-20).

Admitted prior art teaches optimizing each platform location in the best set of platform locations by an iterative process which determines whether an improvement is achieved by moving each of the platform locations within a fraction of a platform reach in eight compass directions around a current selected best platform location (Page 2, Para 004).

7.2 As per the applicants' argument that "Brunet fails to teach, disclose, or suggest the features recited in amended independent claim 1", the examiner respectfully disagrees. Applicants' attention is directed to Paragraph 7.1 above.

7.3 As per the applicants' argument that "Tubel like Cullick and Brunet, fails to teach, disclose, or suggest the features recited in amended independent claim 1", the examiner directs Applicants' attention to Paragraph 7.1 above.

7.4 As per the applicants' argument that "none of the aforementioned references, alone or in combination, teaches, discloses, or suggests each of the features recited in amended independent claim1; none of the aforementioned references discloses the following features: validating the set of possible platform locations to determine that each possible platform location in the set is in a geographically valid area by comparing each possible platform location against a set of exclusionary polygons, determining a best set of platform locations from the set of possible platform locations by an iterative process which adds each of the possible platform locations to a list comprising the user-specified number of platforms and determining if the inclusion of each one of the possible platform locations in the list causes the total set of platforms to reach at least one of: more targets or the same number of targets with less total distance, and optimizing each platform location in the best set of platform locations by an iterative process which determines whether an improvement is achieved by moving each of the platform locations within a fraction of a platform reach in eight compass directions around a current selected best platform location", the examiner directs Applicants' attention to Paragraph 7.1 above.

7.5 As per the applicants' argument that "Amended claims 5-6 and 11-12 depend from amended independent claims 1 and 7 respectively and thus include at least the same features as claims 1 and 7 as well as the additional features set forth therein; Lo, relied upon to cure the deficiencies of the aforementioned references, also fails teach any of the features of claims 1 and 7; Lo merely teaches a method and computer software system for identifying and quantifying connectivity of regions within subsurface reservoir formations, thereby enabling an estimate of the connected reservoir volume of hydrocarbons available for commercial recovery", The Examiner has used **Admitted prior art** in this Office Action.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard, can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K. Thangavelu
Art Unit 2123
February 6, 2006